

Amendments to the Specification:

Please amend the first full paragraph on page 1 as follows:

The invention relates to a method for the thermomechanical treatment of steel. ~~Of the introductory portion of claim 1.~~

Please insert the following heading after the first full paragraph on page 1:

BACKGROUND OF THE INVENTION

Please amend the second full paragraph on page 1 as follows:

German patent document DE 43 40 568 C2 describes a method for the continuous heat treatment of steel wire, which comprises the following steps:

- Rapidly heating the wire to a temperature in the austenitic range at a rate between 85° and 100°C/s;
- Holding the steel wire in the austenitic range for a period of 10 to 60 s;
- Quenching the steel wire to room temperature at a rate > 80°C/s;
- Rapidly heating to the drawing temperature at a rate of 85° to 95°C/s;
- Holding at the drawing temperature for a period of 60 to 100 s;

- Cooling the wire at a rate of $> 50^{\circ}\text{C/s}$ common for water cooling.

Please amend the paragraph bridging pages 1 and 2 as follows:

In German patent document DE 195 45 204 C1, a method is described for the manufacture of high-strength objects from a quenched and temperature steel and for using this process for the production of springs. The steel with (in weight %) 0.4 to 0.6% C, up to 1% Si, up to 1.8% Mn, 0.8 to 1.5% Cr, 0.03 to 0.10% Nb, 0.0.2% V, the remainder being iron, is to be treated as follows:

- The raw material is solution annealed in the austenitic region at temperatures of 1050° to 1200°C ;
- Immediately thereafter the raw material is shaped hot at a temperature above the recrystallization temperature in a first step;
- Immediately thereafter the raw material is hot-formed at a temperature below the recrystallization temperature, but above the Ac_3 temperature in a second step;
- The rolling product is then held at a temperature above the Ac_3 temperature for the performance of additional transformation and working processes, and thereafter
- cooled to below the martensite temperature, whereupon

- it is then tempered.

Please amend the first full paragraph

Finally, [[the]] German patent document DE 198 39 383 C2 discloses a method for the thermomechanical treatment of steel for torsionally stressed spring elements, wherein the starting material is worked at a temperature above the recrystallization temperature and then reshaped at such a temperature above the recrystallization temperature in at least two transformation steps that a dynamic and/or static recrystallization of the austenite results. The recrystallized austenite of the converted product is quenched and annealed. A silicon-chromium steel is to be used, having a carbon content of 0.35 to 0.75%, which is microalloyed with vanadium or other alloying element.

Please insert the following heading after the first full paragraph on page 3:

SUMMARY OF THE INVENTION

Please amend the second full paragraph on page 3 as follows:

It is an object of the invention to make a method available for the thermomechanical treatment of steel, which ~~of the introductory portion of claim~~

~~1, the method permitting permits~~ a targeted improvement in the property parameters directed to the loading profile of the end product.

Please delete the third and fourth paragraphs on page 3 as follows:

~~This problem is solved by a method with the distinguishing features of claim 1.~~

~~Advantageous developments and embodiments of the method are described in claims 2 to 24.~~

Please amend the paragraph bridging pages 3 and 4 as follows:

For the inventive method, the starting material is first heated to a temperature above the recrystallization temperature and subsequently the temperature is equalized over the entire length of the rod. Furthermore, the temperature to which the rod is heated, is kept constant virtually up to the entry of the rod into the roll gap. With these working steps a highly uniform structure of the rod is sought, both over its length and through its cross section, before it enters the roll gap, which is of advantage for the transformation process that follows. On account of the process-specific peculiarities of the skew rolling and due to a targeted establishment of the rolling parameters, a predetermined twisting of the material in the marginal area of the rods and a transformation

gradient over the cross section of the rod set in. Since the direction of transformation during the skew rolling is at an angle to the axis of the material and the maximum of the transformation is in the marginal region of the rods, the structural stretching in this marginal zone, caused by the transformation, is especially greatly pronounced and the structural alignment corresponds to the transformation direction and also extends at an angle to the axis of the rolled material. After the critical degree of transformation is exceeded, the dynamic recrystallization process takes place with special intensity in this marginal zone, so that a gradient of the degree of recrystallization from the outside to the inside may be noted over the cross section of the rod. In the reheating, following the transformation process, to a temperature above A_{c3} , the static recrystallization is completed and leads to the formation of fine-grained austenite, especially in the marginal zone. After hardening followed by tempering, the marginal zone is characterized by a martensite structure of great strength.

Please amend the paragraph bridging pages 5 and 6 as follows:

Due to the transformation action, after a critical transformation degree is exceeded, dynamic recrystallization processes take place, which, on account of the maximum transformation, are more strongly pronounced in the marginal zone than in the core region of the rods. The targeted ~~influencing~~ control of the ~~formation of a~~ transformation gradient over the cross section of the rod has the

result that the first indications of a differential structure distribution appear across the cross section of the rod already during the course of the dynamic recrystallization. Thus, metallographic studies on rods in the recrystallized state, which have been rolled pursuant to the invention, show that the proportion of fine austenite crystals decreases clearly from the marginal zone toward the core region.

**Please insert the following heading before the first full paragraph
page 8:**

BRIEF DESCRIPTION OF THE DRAWINGS

**Please insert the following heading before the second full
paragraph on page 8:**

DETAILED DESCRIPTION OF THE INVENTION